

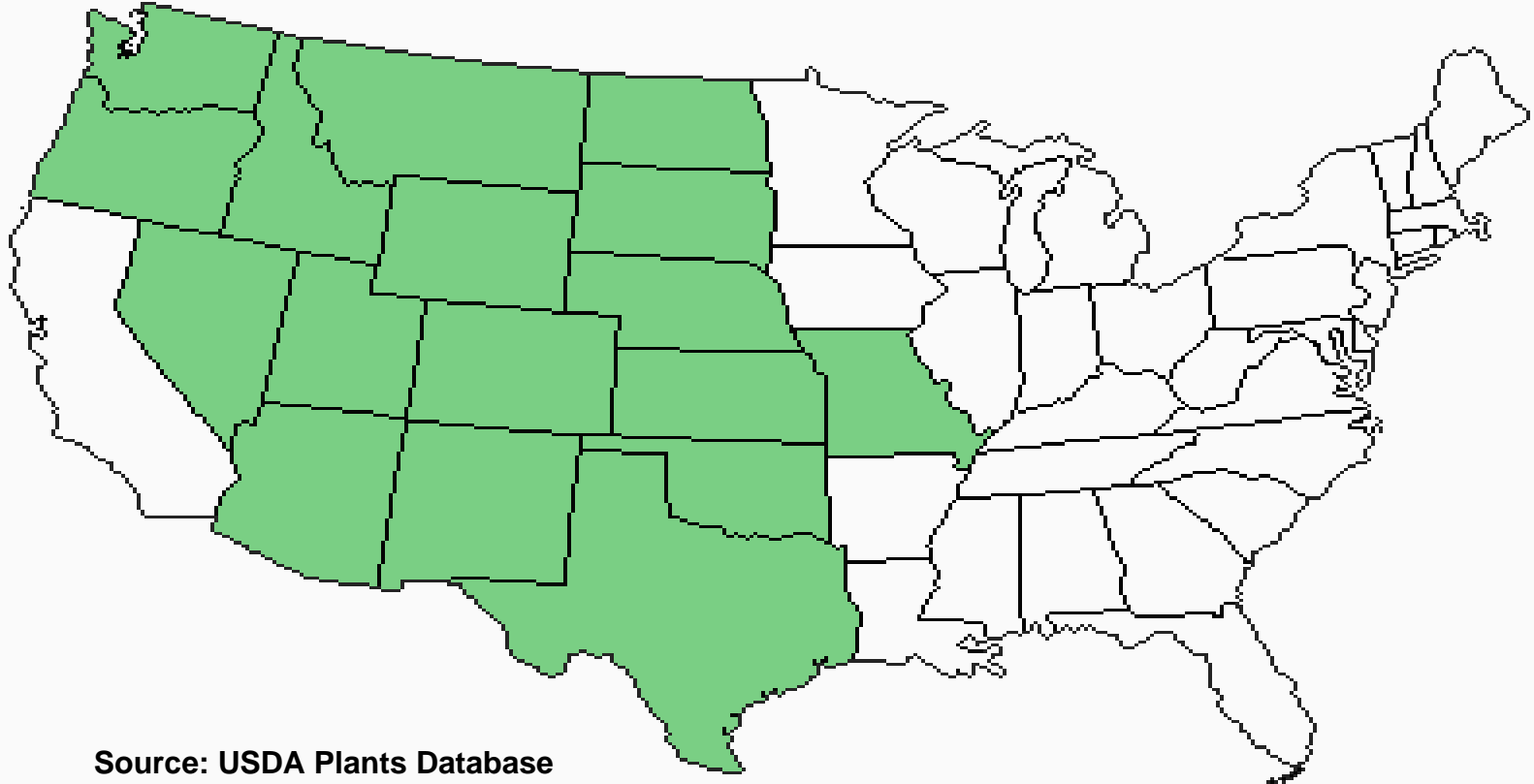
Potential Economic Impacts of *Cactoblastis cactorum* in the United States

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Phoenix, Arizona

United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Center for Plant Health, Science and Technology
Raleigh, North Carolina

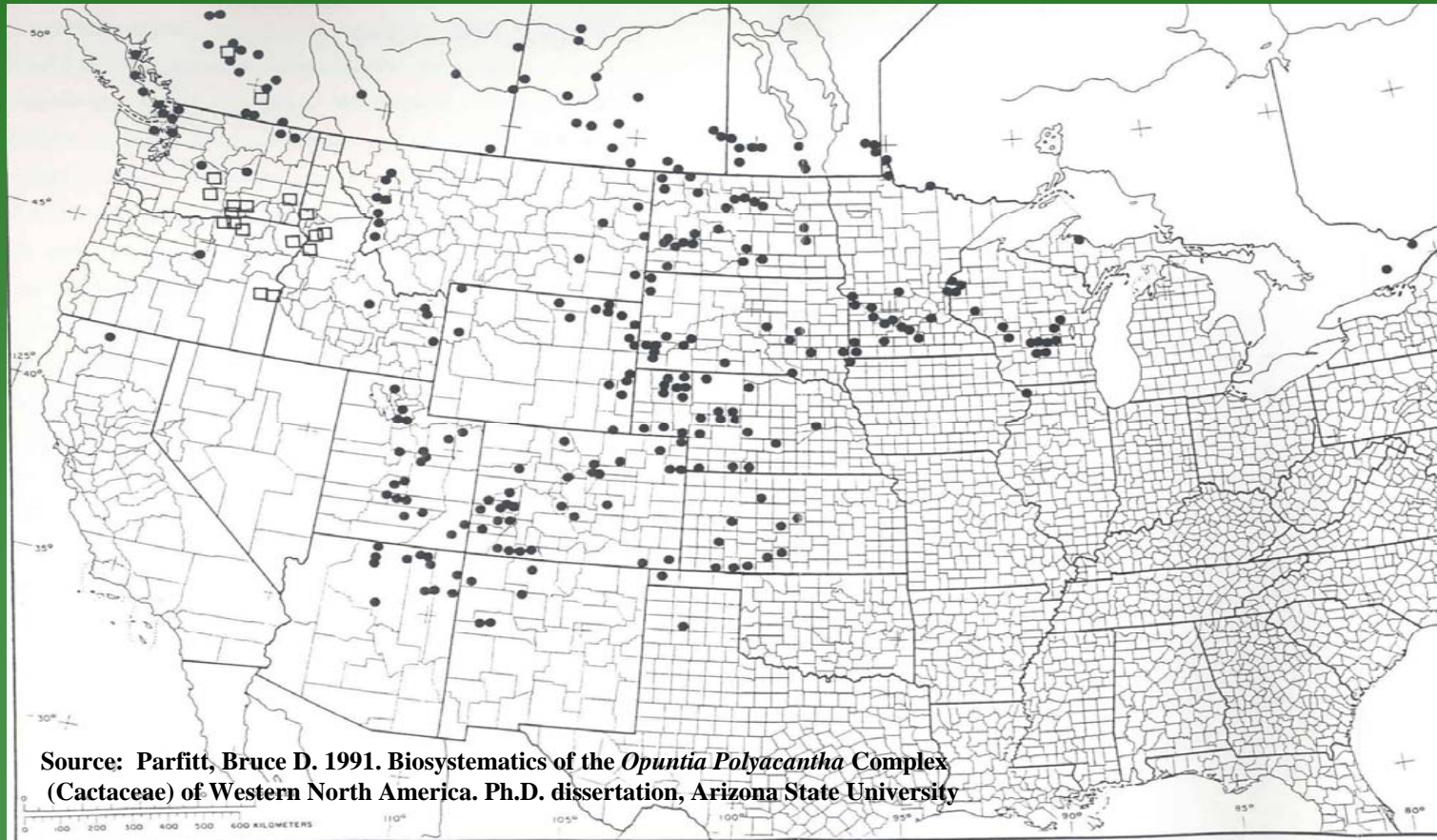


U.S. Distribution Area of Plains Prickly-Pear Cactus

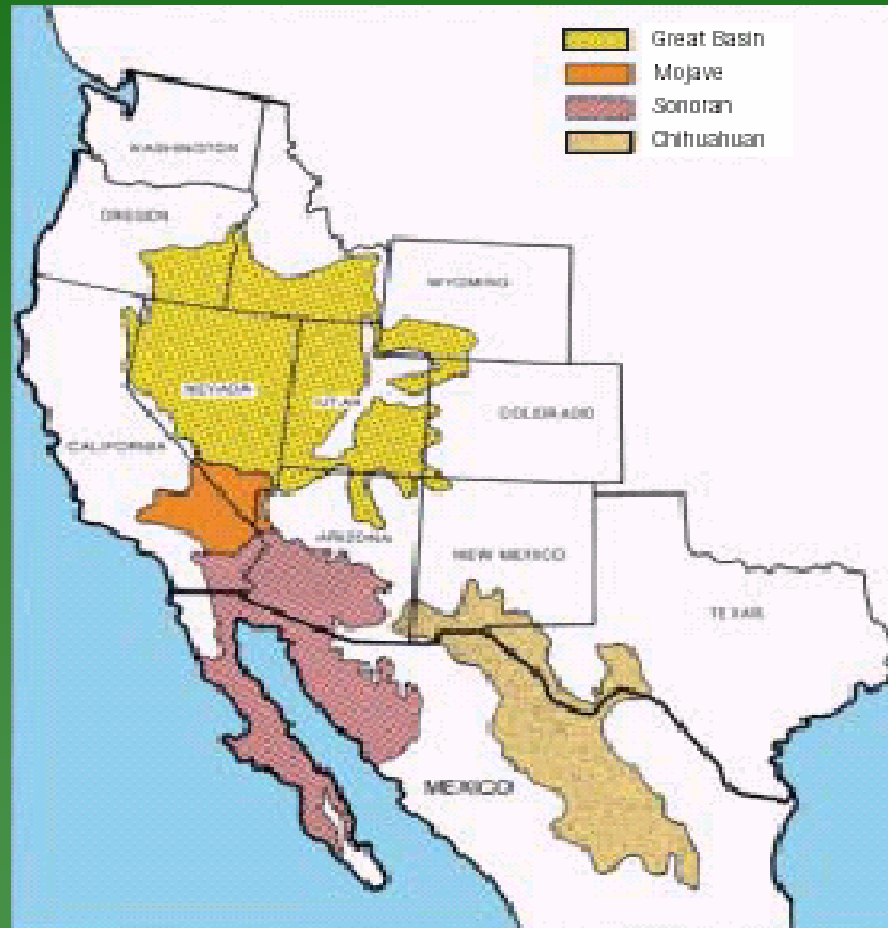


Source: USDA Plants Database

Opuntia xcolumbiana Griffiths Columbia Prickly-Pear (open squares) *Opuntia fragilis* (Nutt.) Haw. Brittle Prickly-Pear (solid circles)



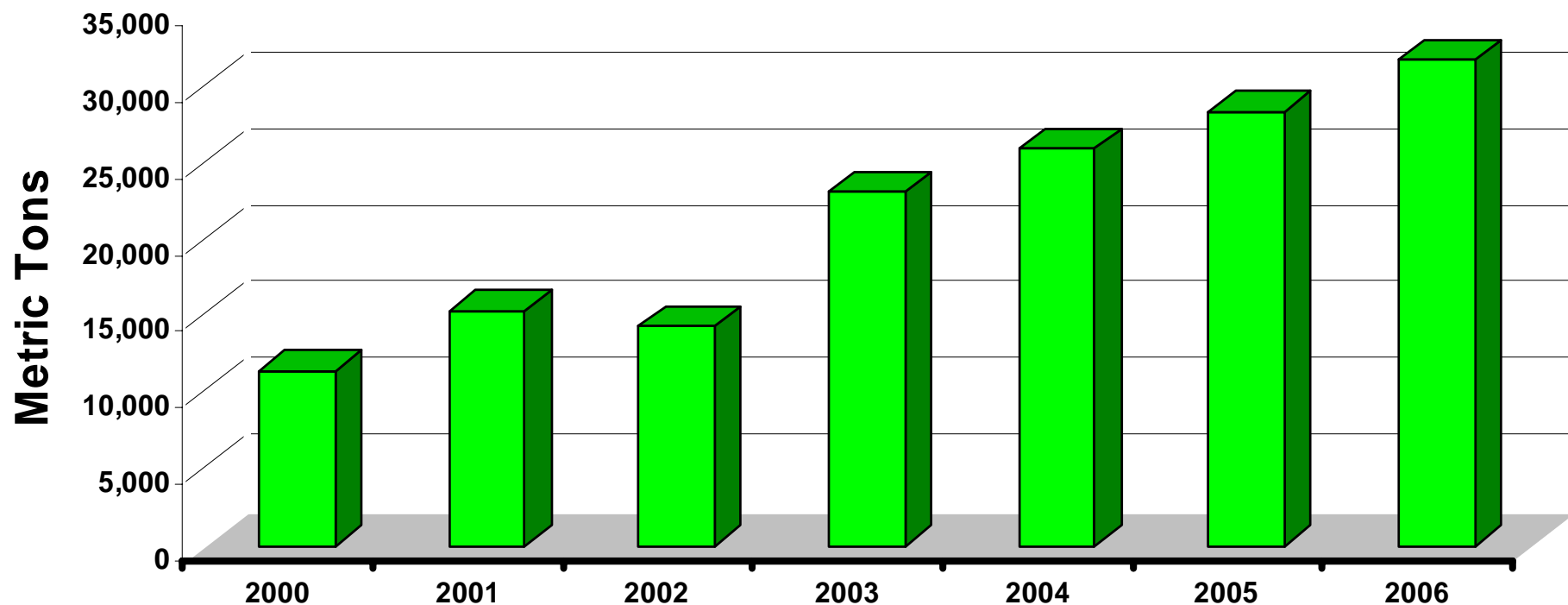
Source: Parfitt, Bruce D. 1991. Biosystematics of the *Opuntia Polyacantha* Complex (Cactaceae) of Western North America. Ph.D. dissertation, Arizona State University



Source: “Deserts” K. Bruce Jones, Inventory and Monitoring of Wildlife Habitat, U.S. Department of Interior, 1986

U.S. Imports of Nopales from Mexico

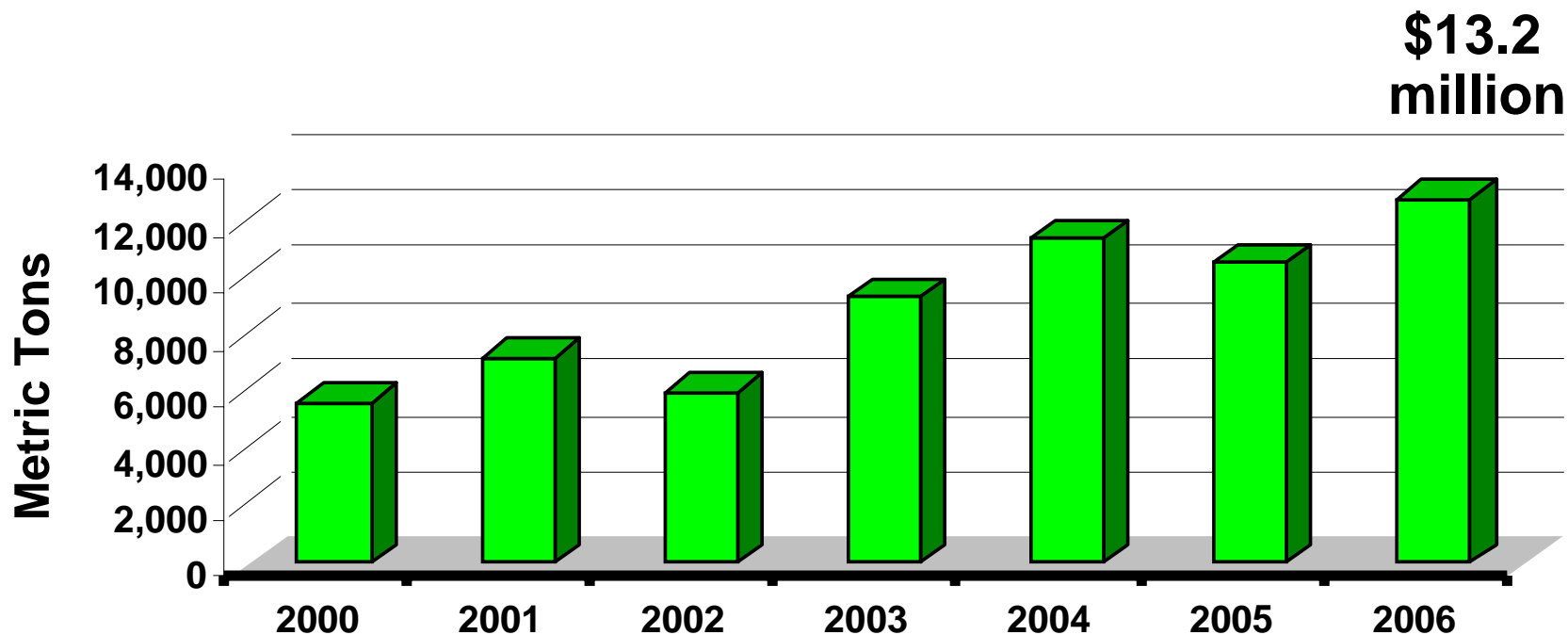
**\$38.5
Million**



Source: USDA Agricultural Marketing Service by APHIS / PPQ

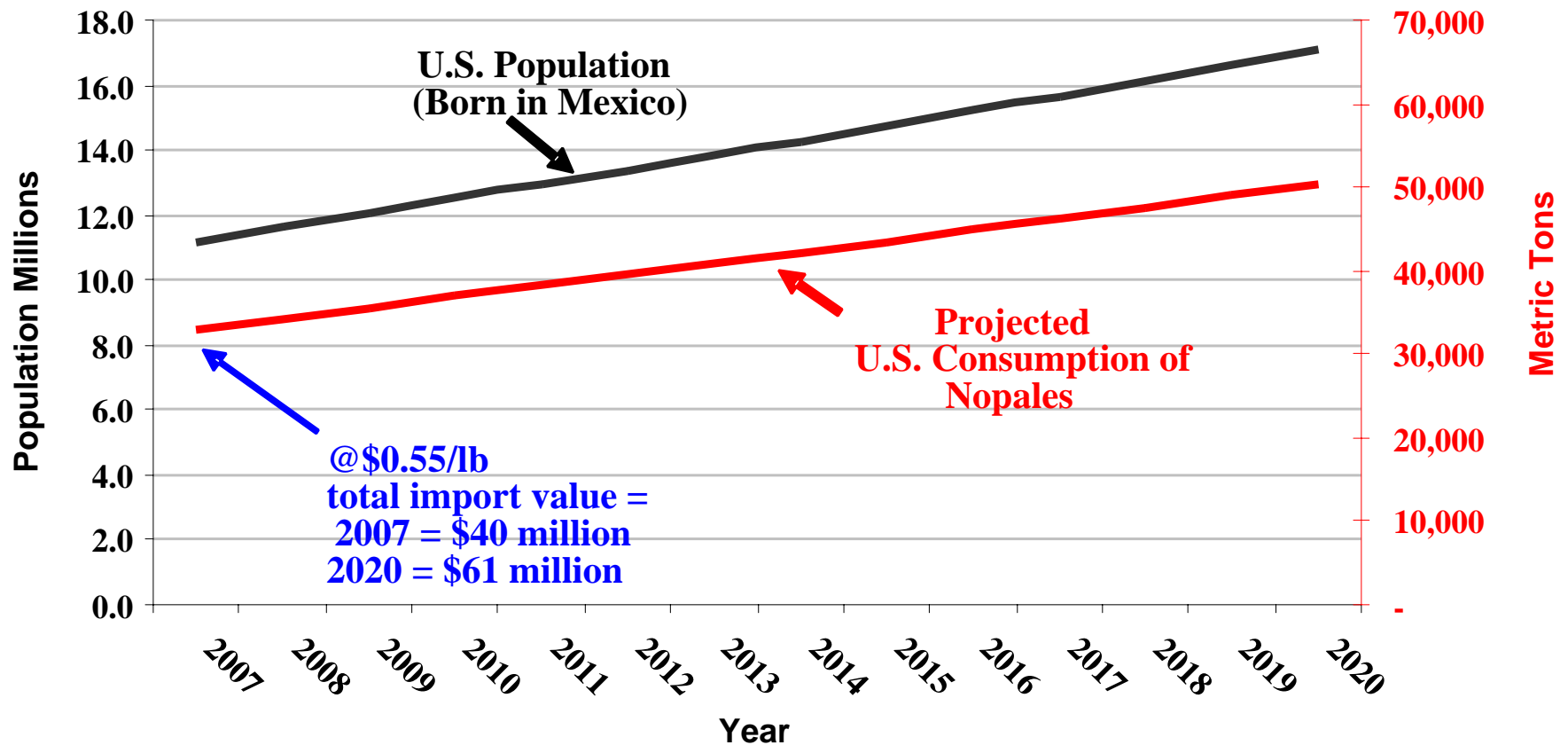


U.S. Imports of Tunas (prickly pear fruit) from Mexico



Source: USDA Agricultural Marketing Service by APHIS / PPQ

Projection of U.S. Population (Born in Mexico) and Nopales Consumption in the U.S.



Value of U.S. Import Trade – Edibles

Nopales (leaves) and Tunas (prickly pear fruit)

2007 estimate

Nopales
= \$40 million

Tunas
= \$13.8 million





Prickly Pear Cactus – Ornamental Landscape

	Number of plants	Wholesale Value \$1,000	Retail Value \$1,000
Telephone Survey – Fall 2000			
Arizona Growers	550,000	\$4,500	\$9,500

–Through personal communication in 2005, Irish estimated that as much as 10 % growth has occurred since study was done.

Irish, M. 2001. "The Ornamental Prickly Pear Industry In the Southwestern United States."
Florida Entomologist, volume 84, No. 4 : 484-485.



1998 Census of Horticultural Specialties

Foliage Plants Sold: Cacti and succulents	Number 1,000	Sales (\$1,000)
Total Operations	341	
Wholesale	10,819 pots	21,716
Total	11,216 pots	23,907
Pots < 6 inches	9,612 pots	11,868
Pots 6 to 13 inches	1,532 pots	9,747
Pots 14 inches or more	73 pots	2,291

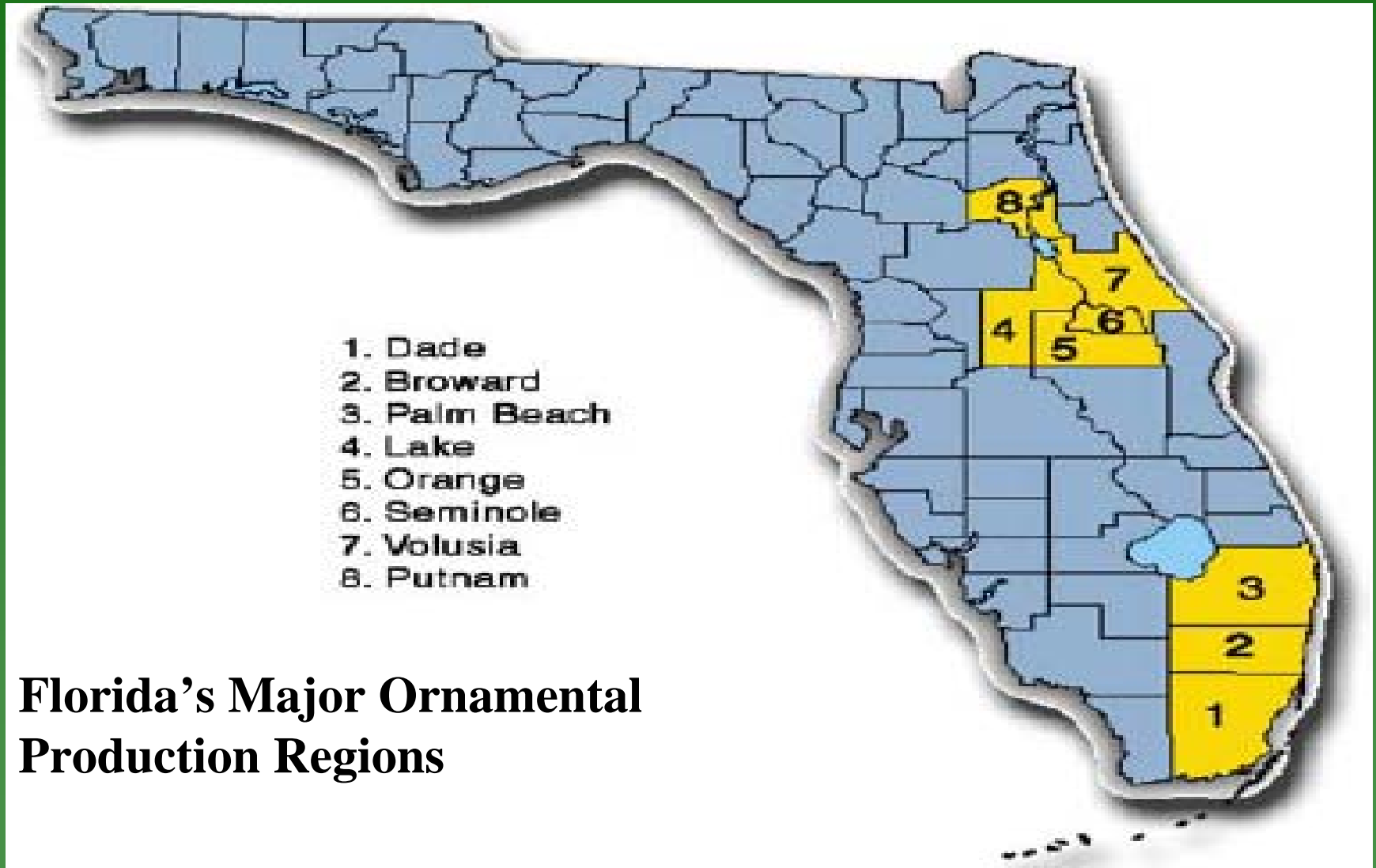
Source: USDA, National Agricultural Statistical Service, 1998 Census of Horticultural Specialties



1998 Census of Horticultural Specialties

Foliage Plants Sold by State: Cacti and succulents	Total Number of Pots Sold Percent	Total Value of Sales \$1,000
California	70%	14,912
Arizona	2%	1,254
Florida	4%	1,071

Source: USDA, National Agricultural Statistical Service, 1998 Census of Horticultural Specialties



Major part of diet for javelina, browsed by deer, supports rodents, reptile, & bird species such as quail, mourning doves

Important to habitat in support of wildlife for hunting

Value of hunting leases in South Texas can exceed value of grazing leases

Studies show a reduction in *Opuntia* would have a negative effect on white-tail deer populations





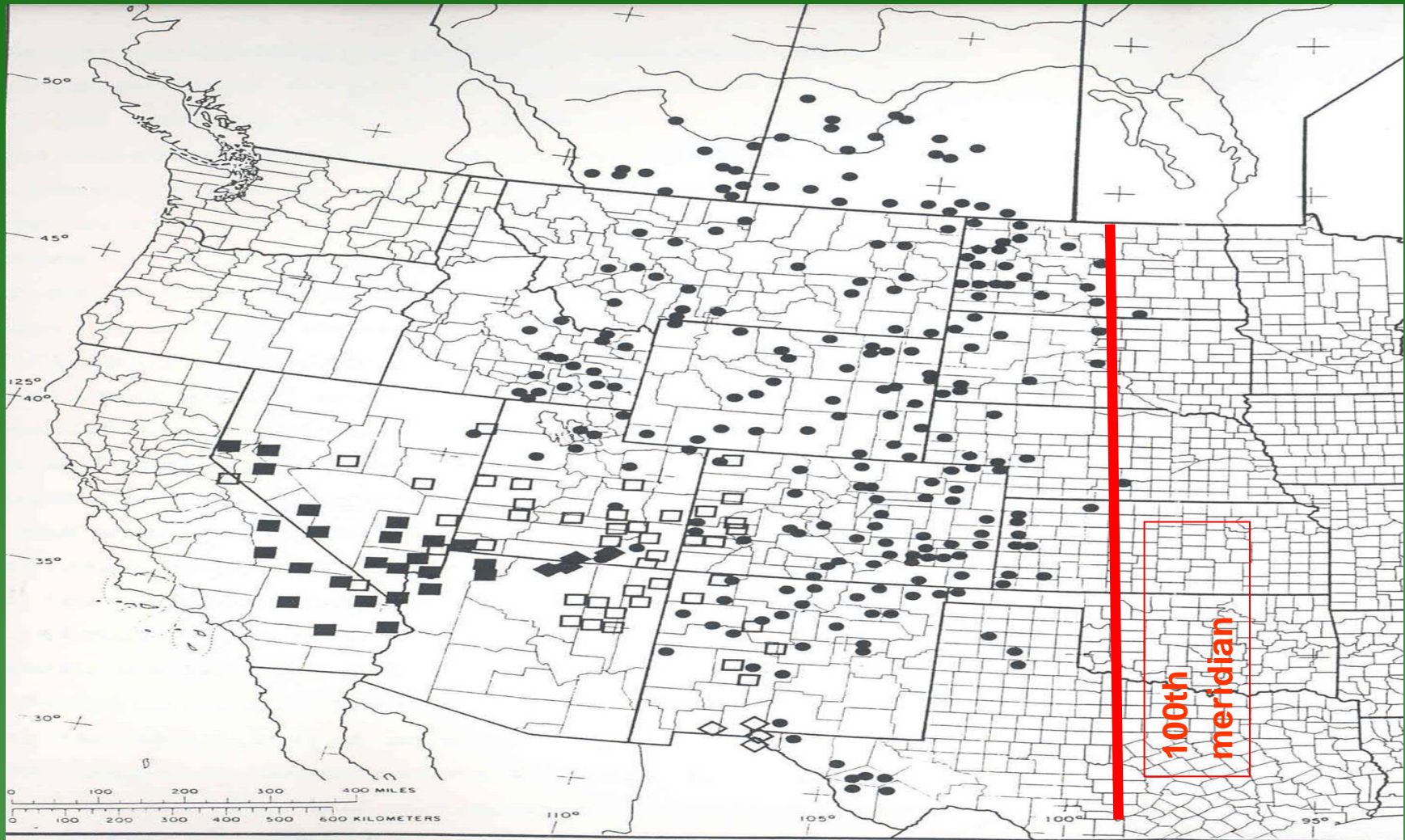
**Hunting lease income to rural land owners
can enhance value to the point that
recreation becomes the highest and best
use of rural land for market and income
and approaches to valuation.**

(Baen, John S., 1997).

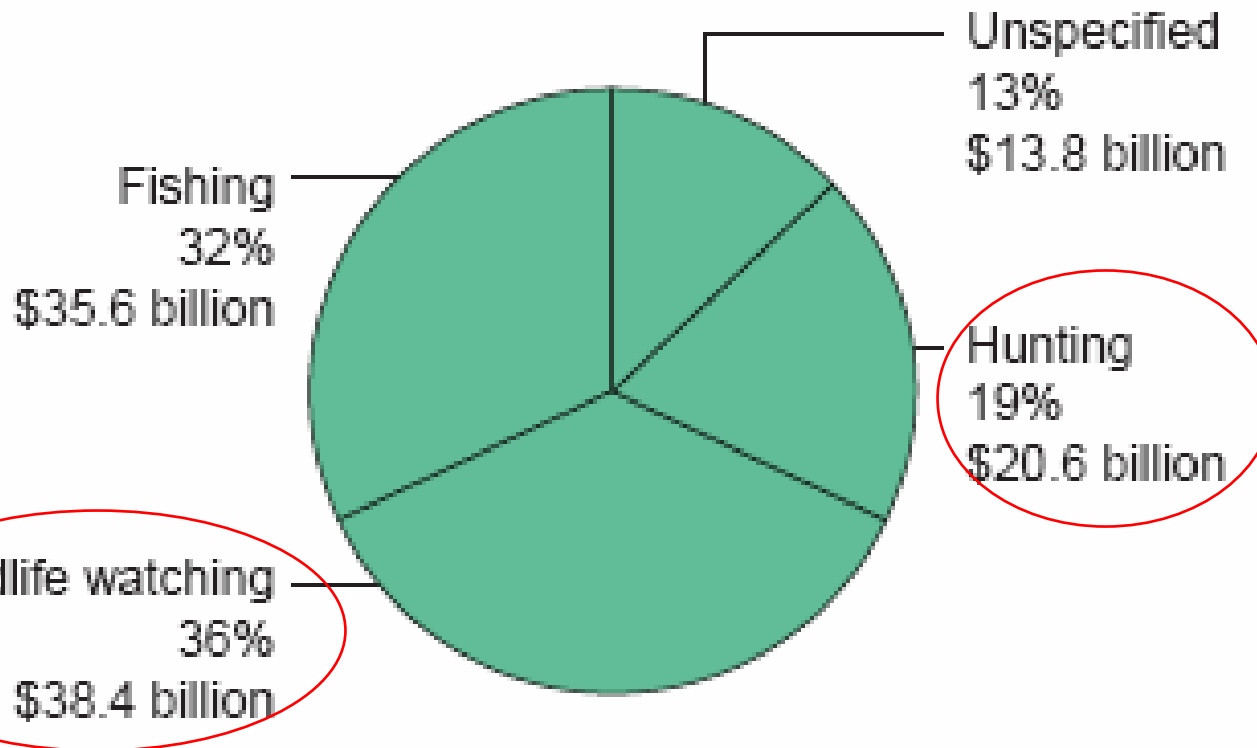
Wildlife Habitat



**Habitat of the javelina
in Arizona**
34 % of the area of the state
60,000 animals



Source: Parfitt, Bruce D. 1991. Biosystematics of the *Opuntia Polyacantha* Complex (Cactaceae) of Western North America. Ph.D. dissertation, Arizona State University



Source: U.S. Dept. of Interior, Fish and Wildlife Service and U.S. Dept. of Commerce, U.S. Census Bureau. *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*

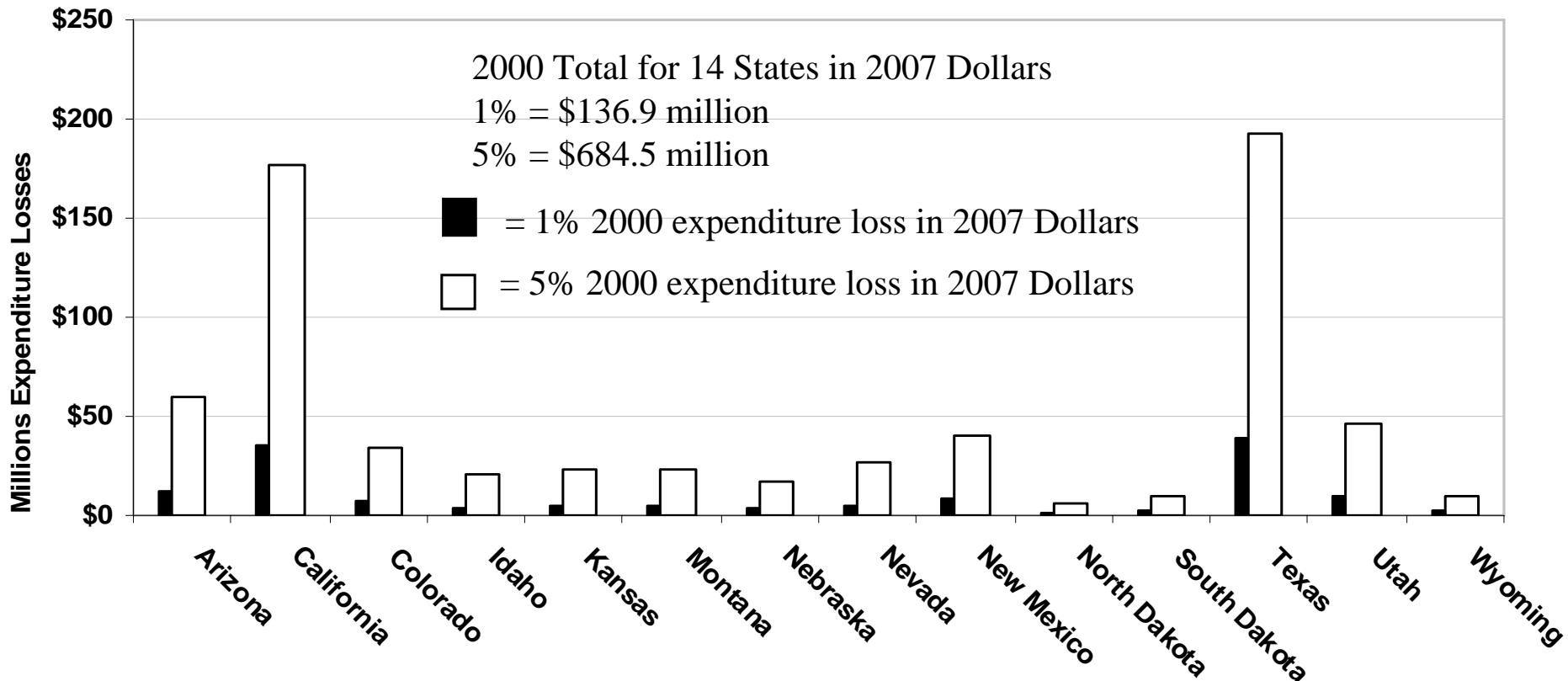


Estimated Economic Impact from Wildlife Loss Resulting From A Decline In Prickly Pear Cactus In Selected States West of the 100th Meridian

	1% Decline	5% Decline
Texas	-\$32.2 to	-\$161.0 million
California	-\$29.7 to	-\$148.6 million
Arizona	-\$10.0 to	-\$49.8 million
Selected Other States	-\$42.8 to	-\$214.2 million
Total Selected States West of 100th Meridian	-\$114.7 to	-\$573.6 million

Assuming a wildlife loss from reduced prickly pear cactus results in a 1% to 5% loss in state total expenditures from resident hunting and wildlife watching using 2000 data.

Estimated Loss (1% and 5% decline) in Total State Resident Hunting and Wildlife Watching Expenditures Associated With Decline in Prickly Pear Cactus



Source: U.S. Fish and Wildlife Service (2000 data adjusted to 2007 dollars)



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Two Ponds National Wildlife Refuge

Arvada,
Colorado

Take A Walk Through Nature In Your Neighborhood

Photo Credit: Seth Beres USFWS



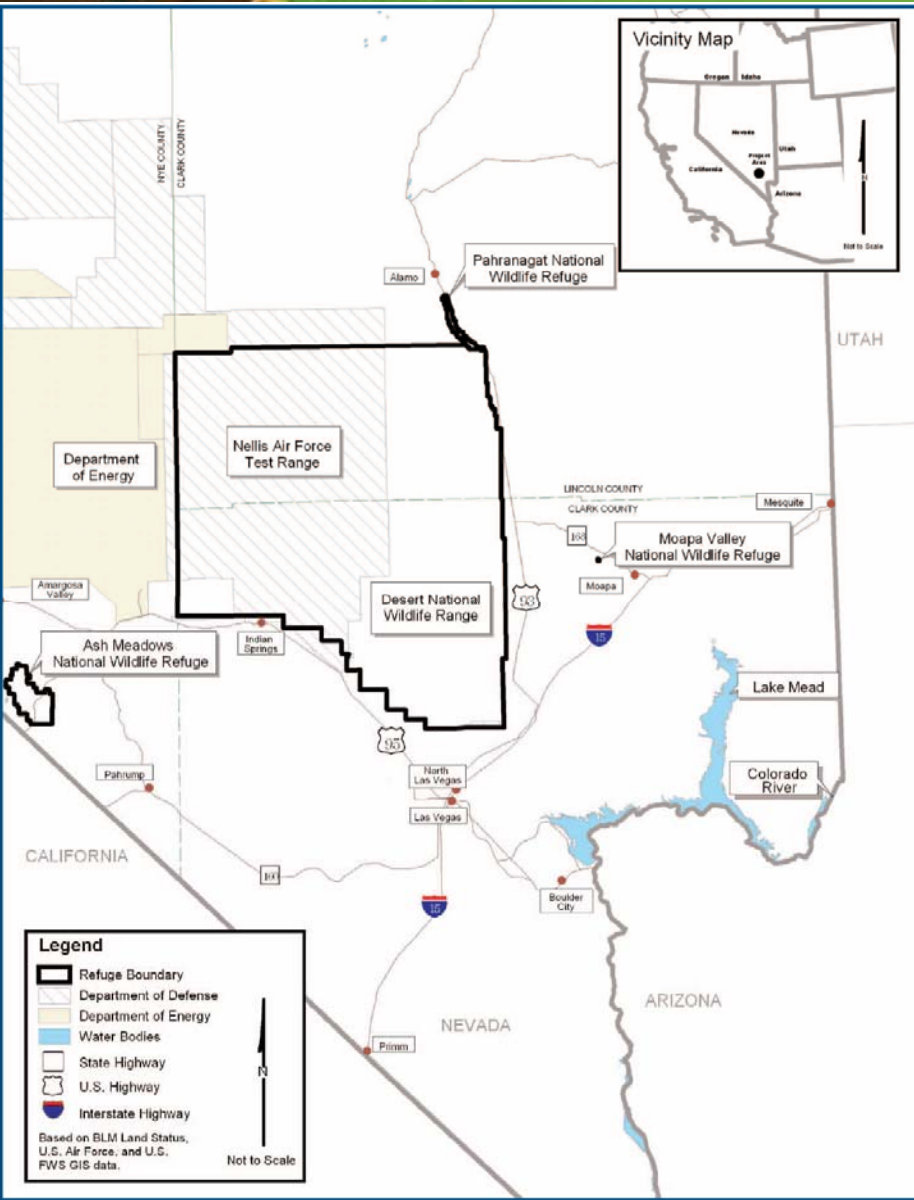
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Wetland Photo by Don Poggensee

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Emergency Forage

	Dry Matter %	Crude Protein %	Total Digestible Nutrients %
Cactus	14.1	3.55	61
Cactus silage	20	2.1	46
Corn silage	26	6.1	61
Grass hay	91	8.1	56

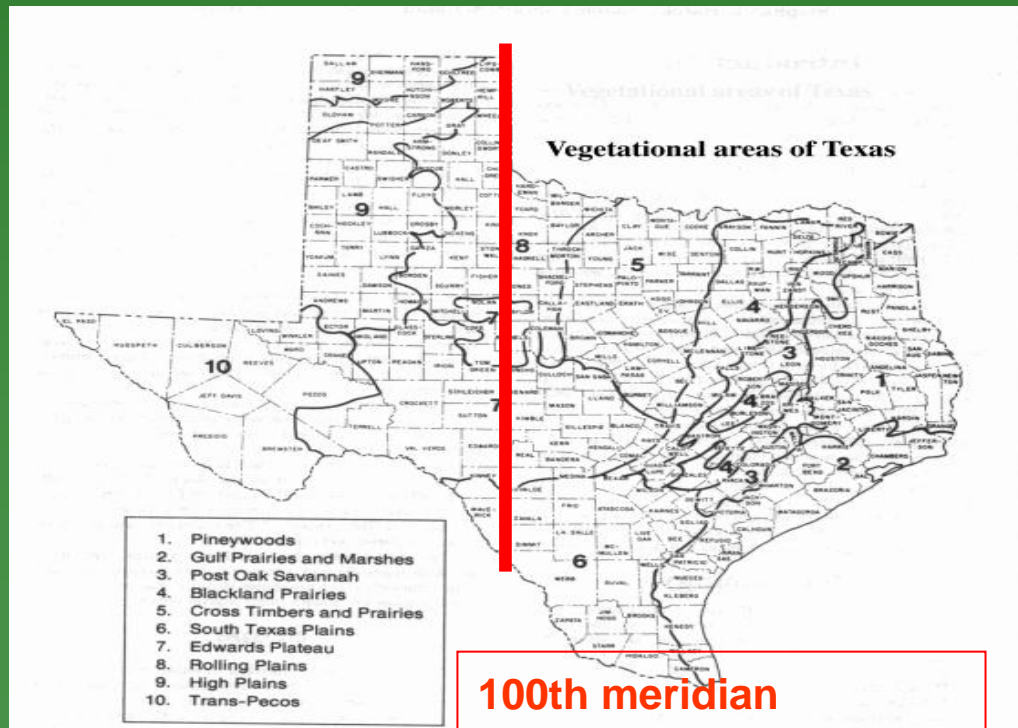
“Pear Burner” in Texas



Image: uts.cc.utexas.edu (<http://images.google.com/images>)

Economic Value Range and Forage

- Potential value in the 14 county Opuntia rich Trans-Pecos region of West Texas \$4 million during a summer drought season.





Potential Economic Impact Summary With Absence of Prickly Pear Cactus

- Non-market aesthetic biodiversity value associated with prickly pear cactus vs. unwelcome plant to some landowners.....\$?
- Southwest U.S. major wildlife cover and food source (whitetail deer, javelina, quail, Texas tortoise desert and other wildlife).
- Economic impact to hunting (reduced value of hunting leases) and wildlife watching.
- Minor agricultural value in U.S. (nursery & food).
- Critical livestock forage value during periods of drought.

Political Considerations of Future Actions on *Cactoblastis cactorum*

Importance to Mexico

- National Symbol (appears on National Flag)
- Economic Significance

Rangeland and Tribal Lands

(food use, hunting leases where *Opuntia* is significant food source for wildlife)

Individual State Concerns

Texas state symbol House Concurrent Resolution No. 44, 74th Legislature, Regular Session (1995) – making prickly-pear cactus the state plant



Expanding Public Policy Interests

Botanists find southwestern cactus growing in Ohio

“Tourism officials hope discovery of a prickly pear cactus in Adams County will help plant the seeds of a tourist boom in the state's Ohio River counties.”

The Associated Press, November 21, 1999

**“I won the race!
The cactus moth didn’t beat me
to this prickly pear”**

